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INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Positioner for Pneumatic Linear Actuators

Ref. GENEBRE: 5952 00 – 5952 04

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INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

1. Product Description.

The electro-pneumatic positioner is used for linear valve operations with pneumatic actuators via an electric controller or control system using an analogue output signal of 4 – 20 mA.
This can be used on double or single effect actuators. Easy adjustment from zero to span. Easy to change rotation (clockwise / anti-clockwise).
Low consumption of air and easy connection of air tubes.

2. Technical Data and Specifications

Positioner Technical Specifications	
Input signal	4 ~ 20 mA DC
Impedance	250 ± 15Ω
Input pressure	1.4 ~ 7 kgf/cm^2 (20 ~ 100psi)
Stroke	Lineal 10 – 150 mm
Air connection	G (NPT)1/4”
Gauge connection	G (NPT)1/8”
Duct	M20 x 1.5
ATEX protection	Non-Explosion
Protection	IP66
Ambient temperature	-20°C ~ 70°C
Linearity	± 1.5 % F.S. (full scale)
Hysteresis	± 1.5 % F.S. (full scale)
Sensitivity	± 0.4 % F.S. (full scale)
Repeatability	± 0.5%
Air consumption	3 LPM (Sup =1.4kgf/cm^2, 20psi)
Flow capacity	80 LPM (Sup =1.4kgf/cm^2, 20psi)
Material	Aluminium alloy
Weight	2.8 kg (6.2 lb)

Retransmitter Technical Specifications	
Connection Type	2 Wire
Output signal	4 – 20 mA DC
Impedance	0 – 600 Ohm
Power voltage	15 – 30V DC
Noise range	50m V pp
Temperature Range	-20ºC / 60ºC (-4 / 140ºF)
Linearity	+- 1% F.S
Hysteresis	+- 0.2 F.S
Sensitivity	+- 0.2% F.S

3. Safety Instructions

The scope of this manual is to allow technically competent users to install, start up, operate and inspect Genebre electro-pneumatic positioners. Qualified personnel must be well versed with all the warnings and notes detailed in these instructions. Failure to observe the warnings and notes could result in personal injury and material damage.

Certain parts of the positioner are subject to mechanical movement which could cause injury.
Any work carried out on the system or electrical equipment must be performed by qualified technicians or by specially trained personnel under the control and supervision of said technicians, in accordance with safety regulations and standards, as well as any other applicable national legislation.

Any misuse could cause serious damage to the components, installations and the equipment itself as well as personal injury. Under no circumstances must any component or part of the positioner be modified or altered. Any such alterations or modifications shall automatically invalidate the intended use of the positioner.

4. Transport and Storage Conditions

- The positioners are dispatched from the Genebre, S.A. facilities in suitable packaging to prevent any blows.
- Any sling, rope or chain used to lift or transport the motorised valves must **NOT** be attached to the positioner under any circumstances.
- The supports of the positioner are designed to bear operating stresses, **NOT** the total weight of the valve, nor any other type of load or stress.
- Do **NOT** knock the positioner against walls, floors or other devices. This may cause severe damage to the positioner or its components.
- Store in a dry and well ventilated place, protected from weather conditions. Avoid placing directly on the floor. Use pallets. shelving or wooden bases.
- Genebre, S.A. recommends a visual inspection to check for any possible damage during transport and storage. The visual inspection must include the interior of the compartments.

5. Preliminary Checks

- Verify that the characteristics of the positioner correspond to the characteristics required prior to installation and start-up These data can be found on the nameplate.
- In the case of a deviation or non-conformity, contact Genebre, S.A.

Ensure that the air supply to be used is dry, clean and filtered as a poor quality air supply could severely damage the positioner.

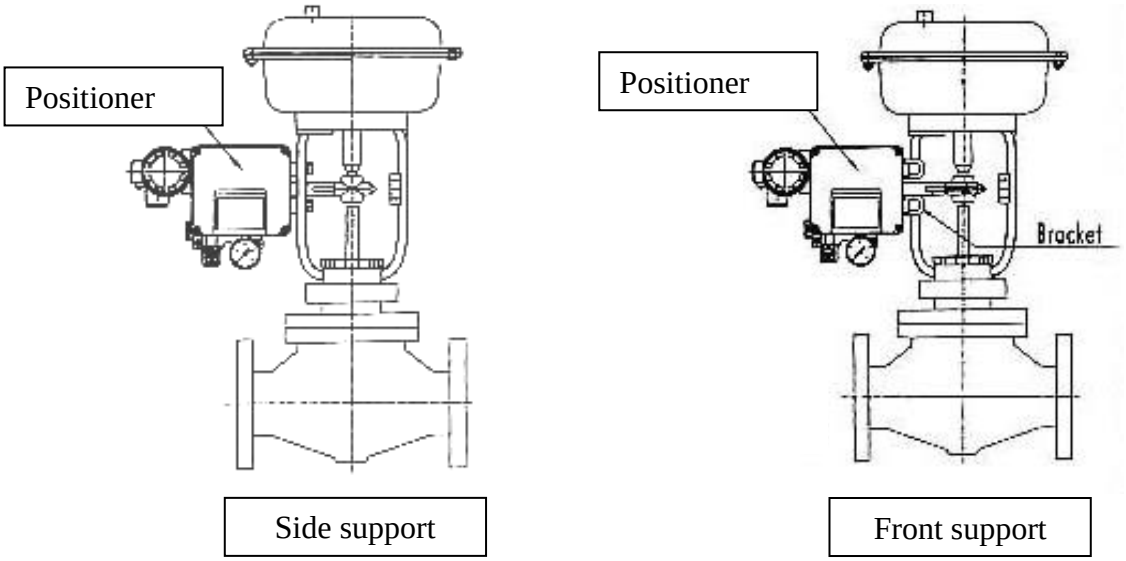
- **Maximum air supply pressure 7 kgf/cm² (100 psi)**

6. Positioner Installation

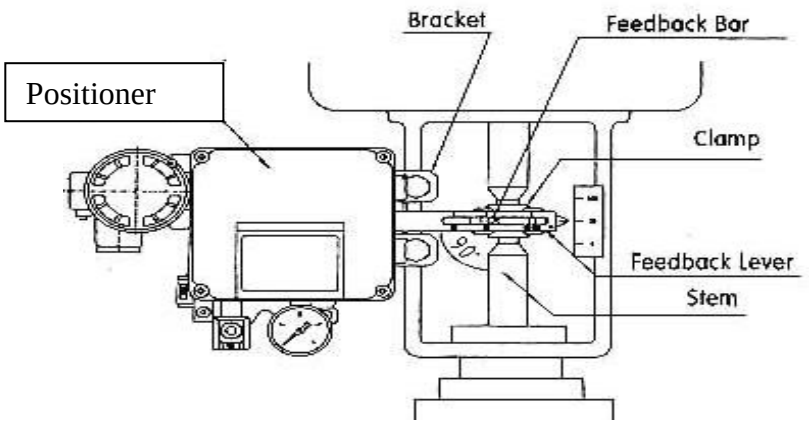
6.1 Installation of Support and Positioner over the valve

- The installation of the positioner over the valve will depend on its design. The positioner comes with a series of accessories within its packaging to cover practically all different types of assembly.

Installation examples over a Regulator and Control Valve:



6.2 Connection to the transmission lever

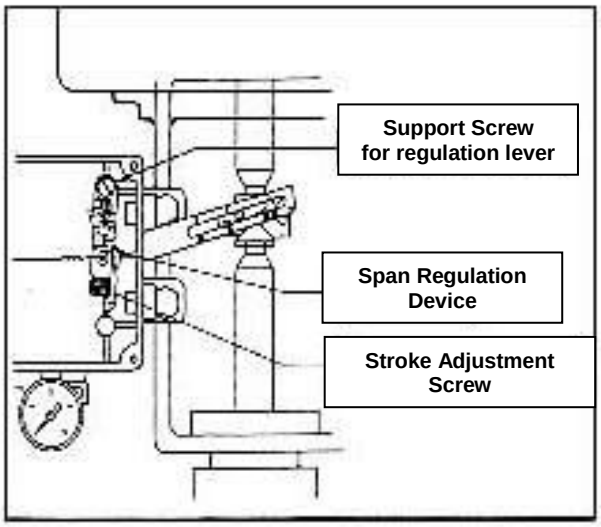


The position of the valve stem and the lever must form a right angle when the input signal is at 50%.

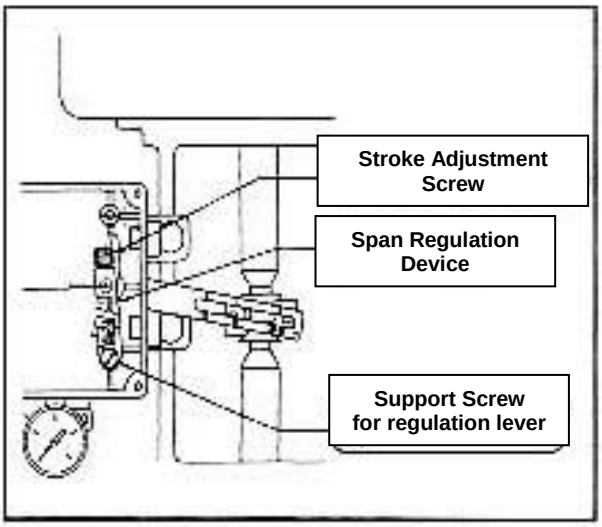
6.3 Modification of the Adjustment Device (SPAN)

Caution: Do not supply air to the equipment during this operation, as this may be extremely dangerous.

Note: The positioner leaves the factory with the SPAN stroke adjustment device in the "DA" (direct action) position.



Direct Action



Reverse Action

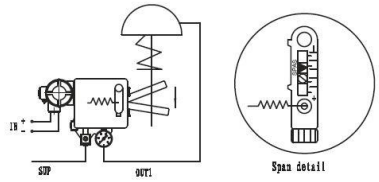
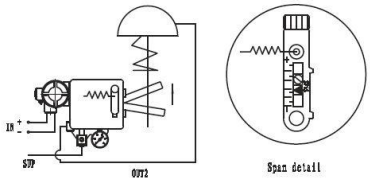
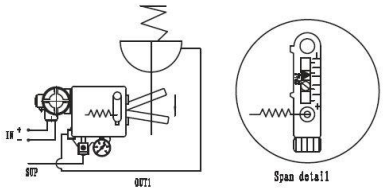
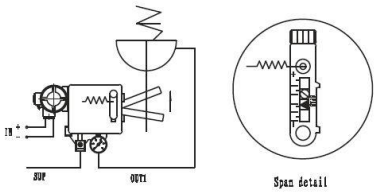
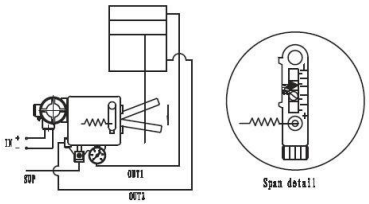
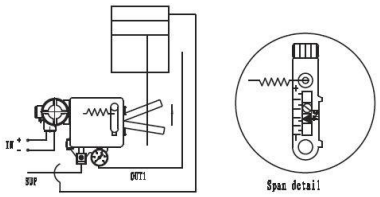
In the case of it being necessary to change the action direction (Reverse Action), proceed as follows:

- Remove the cover of the positioner.
- Remove the support screw from the Regulation lever.
- Rotate the Span Regulation device 180º until the span adjustment screw is in the position opposite the gauge (see diagram).
- Secure the Regulation Lever in place with the screw.
- If it is necessary to reverse the position of the lever, remove the spring holding it in place and then when the lever is in place once again place it in its original position.

6.4 Air Connection

Caution: Ensure that the supply air to be used is dry, clean and filtered

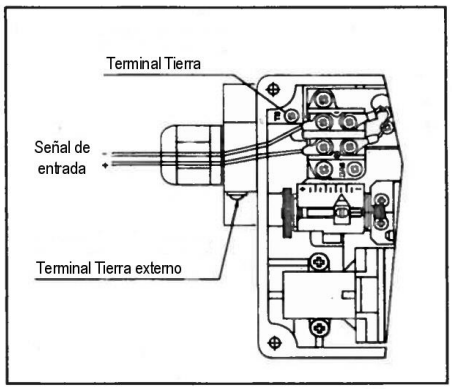
Depending on the need and configuration of the valve, the possible air connection combinations are as follows:

DA Action	RA Action
As the input current increases, Stem goes down, Actuator: DA Span: DA Connection: OUT 1 	As the input current increases, Stem goes down, Actuator: DA Span: DA Connection: OUT 2 
As the input current increases, Stem goes down, Actuator: RA Span: DA Connection: OUT 2 	As the input current increases, Stem goes up, Actuator: RA Span: RA Connection: OUT 1 
As the input current increases, Stem goes down, Actuator: Cylinder Span: DA 	As the input current increases, Stem goes down, Actuator: Cylinder Span: RA 

1. Use a regulator with a filter to maintain a constant air supply pressure (optimum supply pressure of 6 bar to operate the actuator)
2. Completely purge the circuit of air to avoid any foreign bodies.
3. On applications with simple effect actuator (spring return) outlet seal OUT1 or OUT2 as applicable.

6.5 Electrical connection (transmission signal).

Connect the (+) and (-) supply terminals to the respective (+) and (-) input terminals of the positioner or retransmitter, as appropriate.



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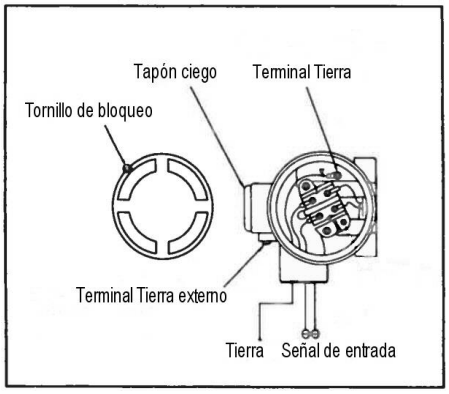
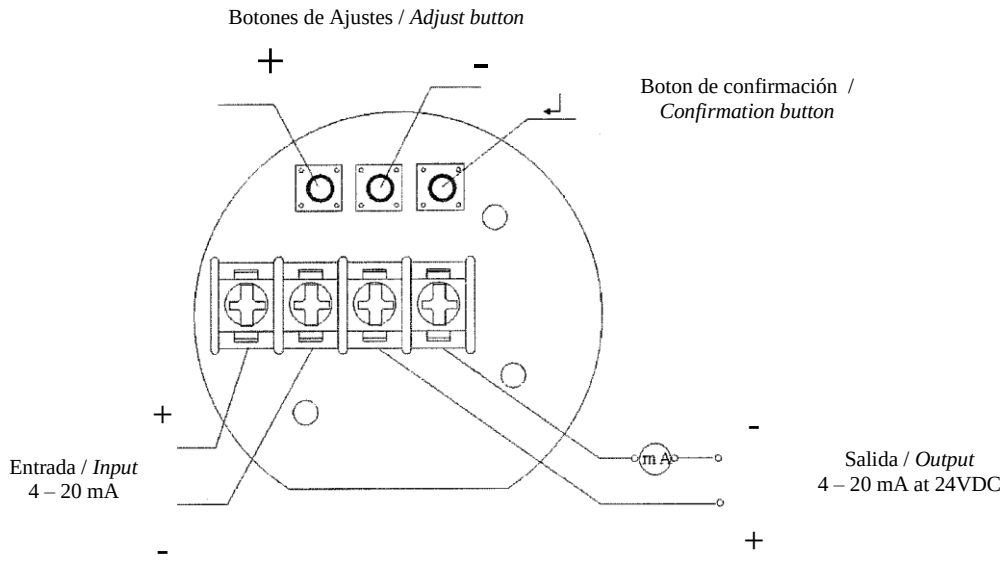


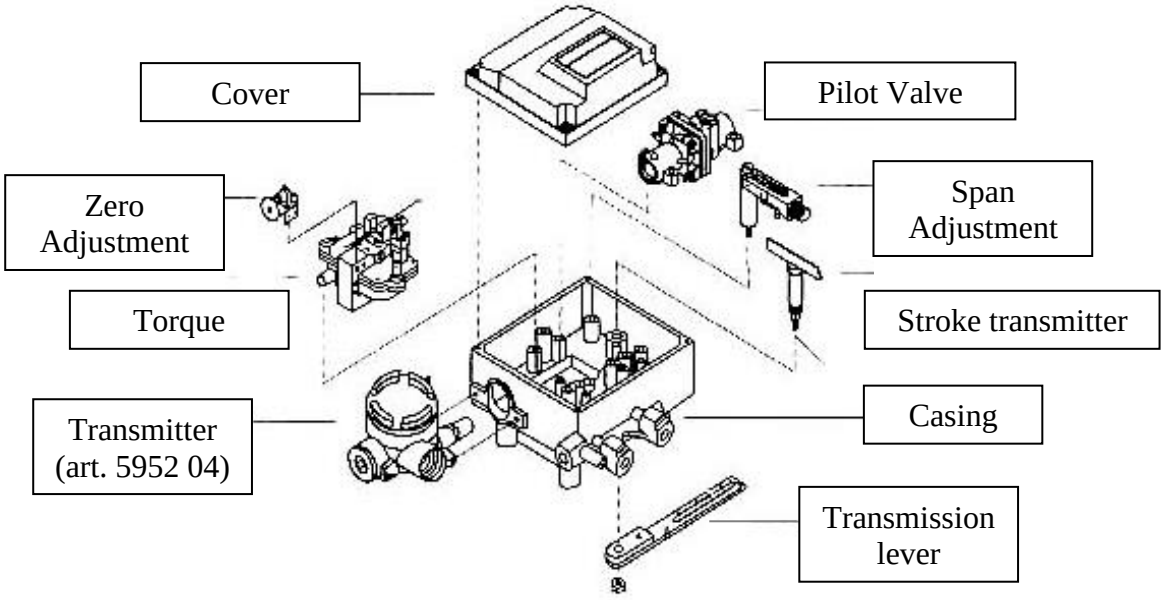
Art. 5952 04

Detail of connection to the transmitter Art. 5951 04



Once the connections are completed, replace the cover and close using the screws.

7. Exploded view

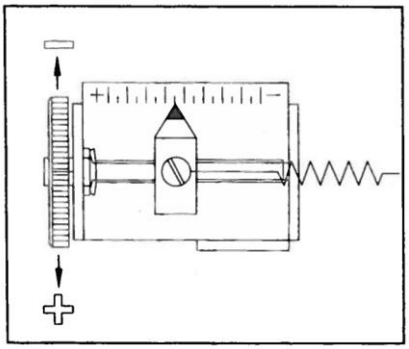


8. Start-up (Settings)

Note: The positioner is already calibrated when leaving the factory

8.1 Zero Setting

- This sends the stroke start signal (4 mA).
- Rotate the ZERO adjustment wheel clockwise or anti-clockwise until the reference lines of the indicator cam match the closed position of the valve.

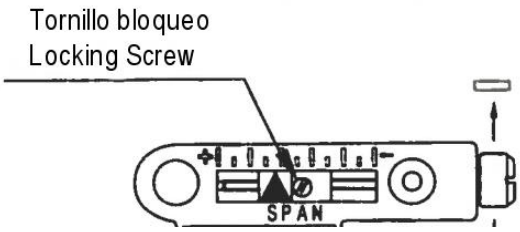


ZERO

- In the case of a simple effect actuator, check that it is at the zero point at standard pressure. Otherwise repeat the Zero Adjustment.

8.2 Span Setting

- Adjust the range so that the actuator stops at 0% position of the stroke with 0% of the input signal (4 mA), and that it stops at 100% position with 100% of the input signal (20 mA) respectively.
- Check the Zero point and repeat the Span adjustment as many times as necessary.
- Once the equipment has been adjusted, tighten the locking screw.

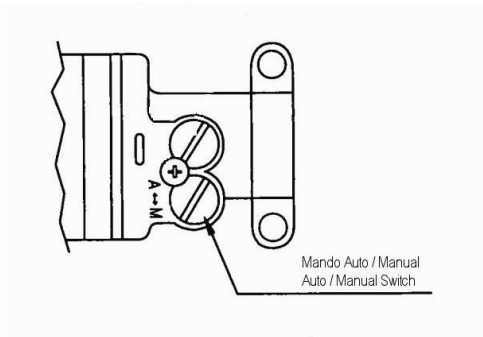


8.3 Auto / Manual Switch

This control is used to switch between Auto and Manual mode. The equipment leaves the factory in Auto mode. To change to manual mode, turn the A/M regulator anti-clockwise.

In Manual mode, the network pressure connects directly to the actuator. Return to Auto mode after using.

Option not applicable to a simple effect actuator connected to the OUT2 output.



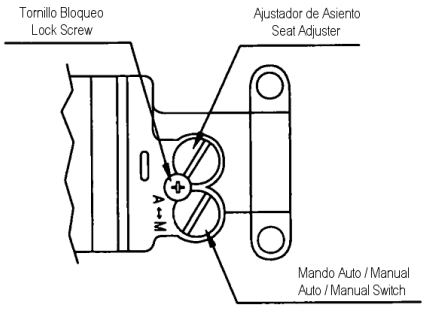
8.4 Seat Adjustment

Caution: This adjustment is performed in factory, therefore no further manipulation is required.

CAUTION! This adjustment must only be carried out by qualified technicians, otherwise, the equipment may become completely unconfigured

- In the case that the sensitivity is very low due to the actuator operating at full load, turn the Seat Adjuster clockwise. If the equipment remains in continual oscillation, turn anti-clockwise until a balance is obtained. Take care not to loosen the locking screw as the seat adjuster may come off.

- In the case that there is oscillation due to the assembly with the actuator with a low air capacity, consult point 8.5.

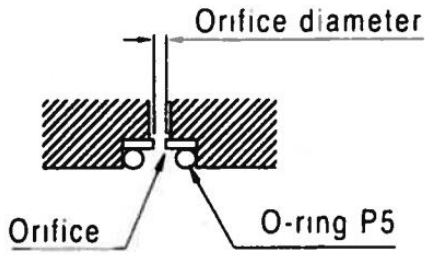


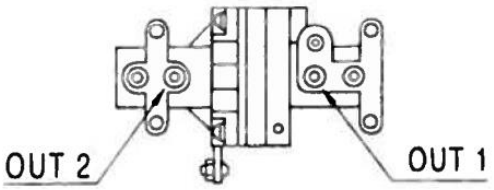
8.5 Air throttle in pilot valve

In the case of actuators with low air capacity, this could cause oscillation on the equipment, rendering it inoperable. In this case, use air throttles in outlets OUT1 and OUT2 in the pilot valve. There are two sizes available that are supplied with the equipment.

Actuator Volume	Output Orifice Diameter
Less than 90 cm^3	Ø 0.7
Between 90 ~ 180 cm^3	Ø 1.0
Greater than 180 cm^3	None

- Remove the pilot valve.
- Remove the O ring, position the throttle and replace the O ring. Take care not to leave any foreign bodies in the orifice of the throttle.
- Perform the same operation on the two air outputs (OUT 1 and OUT 2).
- Replace the pilot valve on the equipment.





If after performing this action the oscillation continues without stopping, please contact Genebre S.A.

8.6 Regulating the transmitter (only article 5952 04)

In the case that it is necessary to be able to calibrate the transmission settings so that the output signal values match the sent signal values (4 / 20 mA).

8.6.1 Connect 24VDC power source, series connect amperemeter convenient for observing the feedcack signal's current value.

Observe the value of the amperemeterr: it must be between 4mA and 20 mA.

8.6.2 Press the "enter" button until the indicator light comes on, release the "enter" button and the indicator light flashes indicating that regulation begins.

Observe the aperemeter value: the value should be 4 mA, if there is deviation, can press the "+" button or "-" button, adjust the current value.

8.6.3 Feedback signal 0% (4 mA) position adjusting
The valve locate in original 0% (4 mA) position. Press the "+" button or "-"button , adjust the current value, then press the "enter" button.
Observe the amperemeter value: if the amperemeter value jump from 4 mA to 8 mA around, means the feedback signal 0% (4 mA) position confirmed. Module waiting for the feedback signal 25% (8 mA) position confirm.

8.6.4 Feedback signal 25% (8 mA) position adjusting
The valve locate in feedback 25% (8 mA) position. Press the "+" button or "-"button , adjust the current value, then press the "enter" button.
Observe the amperemeter value: if the amperemeter value jump from 8 mA to 12 mA around, means the feedback signal 25% (8 mA) position confirmed. Module waiting for the feedback signal 50% (12 mA) position confirm.

8.6.5 Feedback signal 50% (12 mA) position adjusting
The valve locate in feedback 50% (12 mA) position. Press the “+” button or “-“button , adjust the current value, then press the “enter” button.
Observe the amperemeter value: if the amperemeter value jump from 12 mA to 16 mA around, means the feedback signal 50% (12 mA) position confirmed. Module waiting for the feedback signal 75% (16 mA) position confirm.

8.6.6 Feedback signal 75% (16 mA) position adjusting
The valve locate in feedback 75% (16 mA) position. Press the “+” button or “-“button , adjust the current value, then press the “enter” button.
Observe the amperemeter value: if the amperemeter value jump from 16 mA to 20 mA around, means the feedback signal 75% (16 mA) position confirmed. Module waiting for the feedback signal 100% (20 mA) position confirm.

8.6.7 Feedback signal 100% (20 mA) position adjusting
The valve locate in feedback 100% (20 mA) position. Press the “+” button or “-“button , adjust the current value, then press the “enter” button.
Observe the amperemeter value: the amperemeter value should be reduce at first, after the value stable, it will comeback to 20mA, at the same time, the indicator light on module will flash some times.

After finished step 8.6.7, the module automatic enter normal run state

9. Maintenance

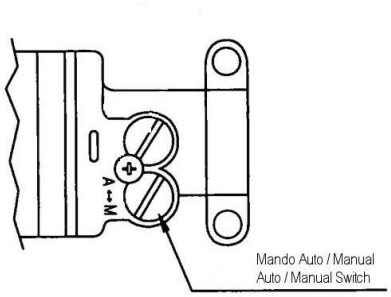
Although this equipment is maintenance free it is recommended to carry out frequent inspections, which must include:

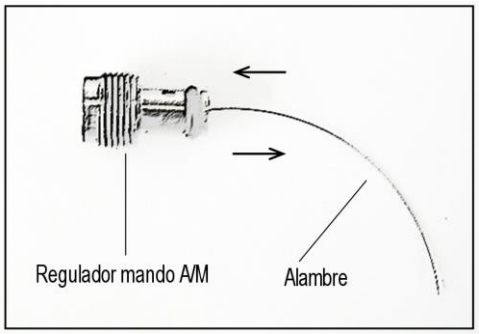
- Checking the assembly / alignment of the actuator and positioner.
- Verifying the electrical signal connection.
- Ensuring that all the screws are present and are firmly tightened.
- Checking the status of the air filters of the installation to ensure the quality of the air reaching the equipment.

10. Cleaning the A / M switch

In the case that the positioner does not correctly respond to the input signals, proceed as set out below:

- Disconnect any air or electricity supply.
- Remove the A / M Switching regulator from the pilot valve.
- Insert the wire (attached to the interior of the cover) through the air inlet located in the A/M regulator in order to eliminate any particle that may have become trapped inside.





Cleaning the A/M switch

- Finally, clean the A/M Switching regulator with compressed air and return it to its housing. Do not forget to secure it with the locking screw.
- The equipment is ready for operation.